

WHAT IS CLAIMED IS:

1. A method of forming substantially ohmic contact regions between a layer of wide band-gap semiconductor material and contact areas disposed thereon, said method comprising:

exposing said semiconductor devices to an annealing temperature less than
5 approximately 900° Celsius for an annealing duration of greater than approximately two hours.

2. The method of claim 1, wherein said wide band-gap semiconductor material comprises a semiconductor material having a band gap of approximately two electron volts or more.

3. The method of claim 1, wherein said contact areas comprise a layer of metal or one or more portions thereof.

4. The method of claim 3, wherein said wide band-gap semiconductor material comprises silicon carbide.

5. The method of claim 4, wherein said wide band-gap semiconductor material comprises n-type silicon carbide

6. The method of claim 5, wherein said layer of metal comprises a layer of nickel.

7. The method of claim 1, wherein said annealing temperature is less than approximately 850° Celsius and said annealing duration is greater than approximately 3 hours.

8. The method of claim 1, wherein said annealing temperature is approximately 800° Celsius and said annealing duration is approximately four hours.

9. A semiconductor device, comprising:

a wide band-gap layer of semiconductor material;

a layer of metal disposed on at least a portion of said wide band-gap layer; and

a substantially ohmic contact region between said layer of metal and said wide

5 band-gap layer, said contact region formed by annealing said semiconductor device at an annealing temperature less than approximately 900° Celsius for an annealing duration of greater than approximately two hours.

10. The device of claim 9, wherein said wide band-gap semiconductor material comprises a semiconductor material having a band gap of approximately two electron

volts or more.

11. The device of claim 10, wherein said wide band-gap semiconductor material comprises silicon carbide.

12. The device of claim 11, wherein said wide band-gap semiconductor material comprises n-type silicon carbide

13. The device of claim 10, wherein said layer of metal comprises a layer of nickel.

14. The device of claim 9, wherein said annealing temperature is less than approximately 850° Celsius and said annealing duration is greater than approximately 3 hours.

15. The device of claim 9, wherein said annealing temperature is approximately 800° Celsius and said annealing duration is approximately four hours.